

2

May 1, 1961

Brig. Gen. D.D. Flickinger  
Air Research and Development Command  
Andrews Air Force Base  
Washington, D.C.

Dear Don:

Elliott Levinthal has left for Europe, but I can write on behalf of both of us with regard to your offer for support of our general program in medical electronics. Frankly, we are not badly strapped for funds to support our immediate program in exobiology, but it would be most helpful to have assurances of additional support as the basis for the enlargement of the biomedical engineering facility that we hope to accomplish -- and which indeed is taking place. On this account, if it is still mutually convenient, I would be happy to attempt to relieve you of the \$30,000 that you mentioned as a possibility for a starter. During the next year or two, this would enable us to get some additional equipment, or to put on another engineer on various connected problems, the work on which would, in any case, be a valuable training as well as research experience. We feel also that a liaison with you might be extremely helpful to us as a possible basis for access to important relevant information through registration with ASTIA. If you would go along with naming us as consultants on at least a formal basis, this presumably would also be helpful in establishing "need to know" for security purposes. In addition, I would hope that such a liaison might also give us access to Air Force information and perhaps some surplus or loanable equipment in the area of common interest. Our longer range view about this program is not that we have established an explicit commitment to take on applied projects within Air Force jurisdiction in bioastronautics, but rather that we already have a considerable number of common interests and that we might also serve in the further training of the kind of people that you are going to need rather badly. If the sense of this letter is in accordance with your own views, as I trust it is from my recollection of our conversation, we would be happy to be able to go ahead with a formal request for contract support.

An explicit project that we are rather interested in now and that might be quite appropriately set forth as the basis for the contract is the recording of the movement of particles -- explicitly microorganisms -- by video tracking techniques. This would involve setting up a television microscope and writing its output into a storage tube. After frame interval delays, the record would be read out for comparison with the input signals, and the differences stored. These differences should represent the track of those particles whose images have moved from one frame to the next, the remainder of the background having been obliterated by the difference

operation. The same general procedure should be of considerable advantage in other kinds of reconnaissance, particularly where one is looking for a rare moving object against a dirty background of stationary ones (or vice versa!). In fact, it would be incredible to me if an identical technique had not already had a number of applications in surveillance work, but I have not been able to find any published notes of this. Indeed, perhaps the first favor that we might try to beg from you would be access to bibliographical help on the existing literature that might be related to this subject.

If you will let me know what should be done to implement our application, I will be most grateful.

Yours cordially,

Joshua Lederberg  
Professor of Genetics

Jc